REMARKS

The examiner has rejected all of the claims under 35 U.S.C. § 103(a) as being unpatentable over Ose et al. U.S. Patent No. 6,043,491, further in view of Takaoka et al. U.S. Patent No. 6,335,530.

Reconsideration is respectfully requested.

The examiner states:

> Regarding claims 1 and 11, 491 teaches a scanning electron microscope and a method of detecting electrons having an objective lens (106) that is viewed to have inner and outer polepieces. A magnetic field is generated and the objective lens acts to focus the electron beam onto the specimen (107) (col. 4, lines 42-53). A negative (retarding) voltage is applied to the specimen (col. 4, lines 39-41), which will obviously decelerate the electron beam, a conversion electrode (113) is provided and it is an obvious matter of placement to place this electrode in the desired location. further, the secondary electrons are guided to an electron detector (121) for detection (col. 4, lines 15-41 and Fig. 1.) It is obvious that the electrons are confirmed by the magnetic lens field, and that the electrons will move into a location where the magnetic lens field is weak.

With regard to the Ose et al. patent, the primary reference herein, the examiner has chosen to compare the detector 121 with the Applicant's detector 10. The Ose et al. detector 121 is positioned above the objective lens in a position relative to the conversion electrode 113 where it does not detect secondary electrons emitted from the conversion electrode and above even the scanning coils 108. The detector does not collect electrons emitted from the conversion electrode 113. If, as the examiner apparently has found, the Ose et al. patent teaches placing the secondary electron detector above the objective lens and the scanning electron coils and in a position where it cannot detect secondary electrons emitted from the conversion electrode, it clearly teaches away from the Applicant's invention.

Perhaps the examiner had in mind comparing the detector 120 of Ose et al. to Applicant's detector 10. Even in this case, the Ose et al. reference does not suggest Applicant's claimed subject matter. Ose et al. does not teach that the objective lens field "leaking onto the surface of the specimen". Ose et al. do not disclose a "first opening formed in the inner polepiece" and a second electron detector "mounted outside the inner polepiece". Still further, Ose et al. do not teach the conversion electrode mounted "around an electron beam passage inside the objective lens".

These limitations which distinguish the Ose et al. patent are significant. Note that the positioning of the conversion electrode mounted around the electron beam passage inside the objective lens and the detector positioned outside the opening in the inner polepiece enable the collection of secondary electrons emitted from the conversion electrode without the need for the "electric field generating apparatus and a deflecting magnetic field generating apparatus" described in Ose et al. (Col. 4, ll. 42-67). This complex scheme is necessary with the placement of the conversion electrode and second electron detector taught by Ose et al. in order to prevent the "direction of the electron beam 104 from being altered by the deflecting electric field". The Ose et al. patent standing alone clearly fails to suggest the Applicant's claimed subject matter.

The examiner states:

> 491 does not explicitly teach the desired location of the detector, but 530 depicts, in Fig. 8, the claimed inner polepiece (3a) and outer polepiece (3b) as well as the secondary electron detector (2) mounted outside the inner polepiece (3a) to detect the secondary electrons (col. 3, lines 21-37 and Fig. 8). They teach the appropriate application of the desired magnetic field, and it is obvious that the inner polepiece can have a first opening because this opening is merely used for increased symmetry abut the axis, and the prior art clearly depicts the needed symmetry. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to position the detector outside the inner polepiece

> because this will lead to efficient detection and lead to an accurate secondary electron image.

Takaoka et al. does not disclose an opening in the inner polepiece and a secondary electron detector mounted outside the inner polepiece to detect electrons passing through the first opening. Hence, no modification of the Ose et al. reference with the teachings of the Takaoka et al. patent would result in the Applicant's claimed invention.

Any combination of the two references would require further modification to provide the subject matter set forth in claims 1 and 8. After the combination of the two references as suggested by the examiner, the conversion electrode would still not be mounted around the electron beam inside the objective lens, there still would be no opening in the inner polepiece, and there still would be no secondary electron detector mounted outside the inner polepiece to detect secondary electrons passing through the first opening.

Moreover, there is no suggestion or motivation set forth in either reference that they be combined and then modified or that by doing so the advantages of the Applicant's invention would be obtained.

In spite of the complexity of the arrangement of the perpendicular electric and magnetic fields in the Ose et al. device, those patentees did not disclose simplification in a manner as disclosed by the Applicant. It is only by reference to Applicant's disclosure that one can begin to consider choosing elements from the two references and arranging them, and then modifying them in a way to provide the Applicant's claimed invention. The Applicant has set forth a very specific arrangement to achieve a very specific objective not suggested by the prior art.

The examiner states:

> Regarding claims 2-6 and 8-10, it is obvious that the electrode can be cylindrical and can be provided with the desired openings in rotational symmetry about the axis.

> Further, 491 teaches the application of a potential to the electrodes (111 and 112) and these electrodes will act as conversion electrodes and teaches on the claimed split into two parts (col. 5, lines 1-10). The exact placement of the electrodes is considered obvious, and it is known that the application of the potential will attract the secondary electrons and that the electrode is coated with the appropriate material.

There is no suggestion in either of the references to provide a cylindrical electrode. If the flat conversion electrode 113 of Ose et al. is converted to a cylindrical electrode, it still would not be positioned within the objective lens. Moreover, there is no suggestion to modify the flat conversion electrode into a cylindrical electrode. That something can be done does not make it obvious to do so.

In view of the foregoing remarks, it is urged this case is now in condition for allowance.

Respectfully submitted,

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